Gamification to Promote Sustainable Transportation

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What is gamification?

Gamification is the use of games to engage and motivate people to achieve some goals.

Gamification applies game playing elements such as point scoring, competition with others, and rules of play.

Point scoring and Competition enables users to get involved in the game.

Motivation

Research shows that gamification generates positive changes in beliefs and behaviors, although many of these games use fabricated characters and situations.

Gamification is a creative way to inspire people to adopt more sustainable transportation behavior.

Gamification is interactive and different from other media such as infographics, posters, or videos, which are passive ways to engage people.

Games like ingress and Pokémon GO are really popular in youth.

Methodology

Android application to track user movement using sensors available on the mobile devices like GPS, Accelerometer, Barometer.

User movement tracked using Google's **FusedLocationProviderApi** and **ActivityRecognitionApi.**

FusedLocationProviderApi : Provides accurate location data by considering GPS, Accelerometer and Wi-Fi Connectivity.

ActivityRecognitionApi: Provides user's current activity obtained from the sensors:

Activities Obtained from ActivityRecognitionApi
- In Vehicle
- On Bicycle
- On Foot
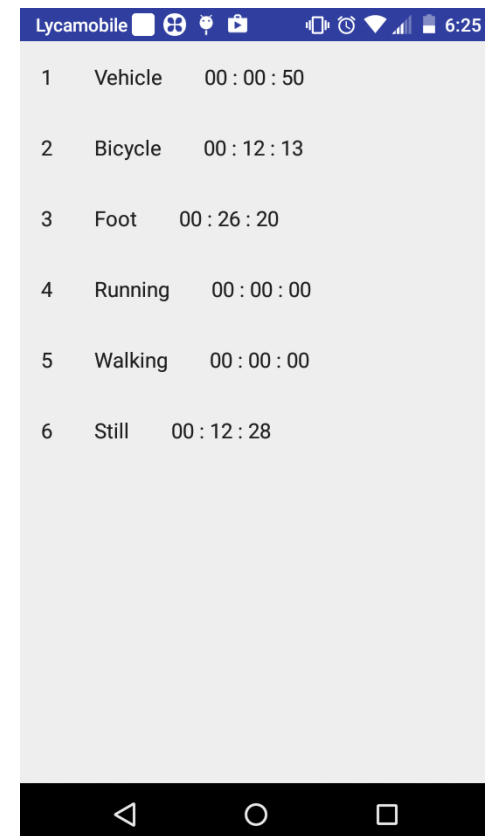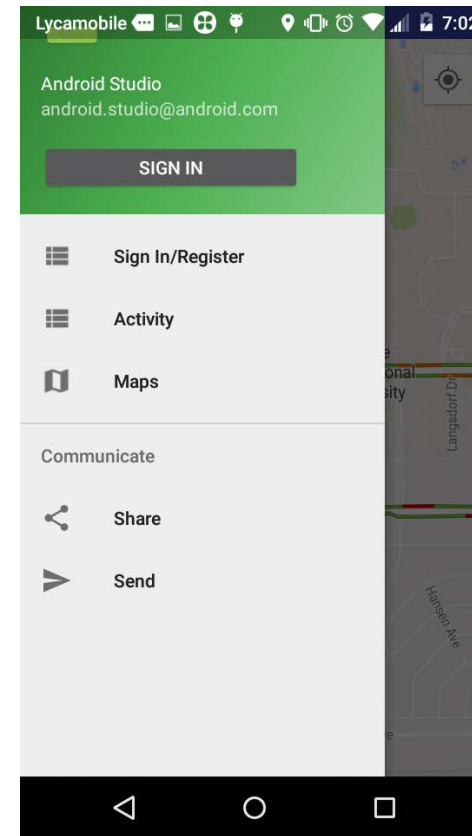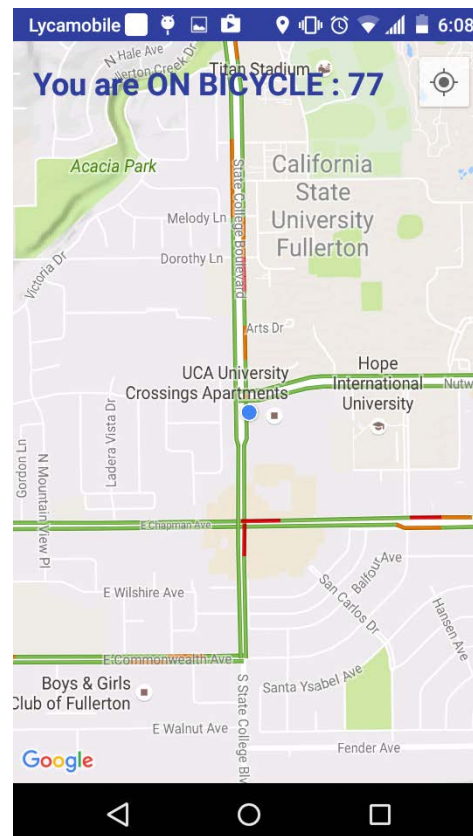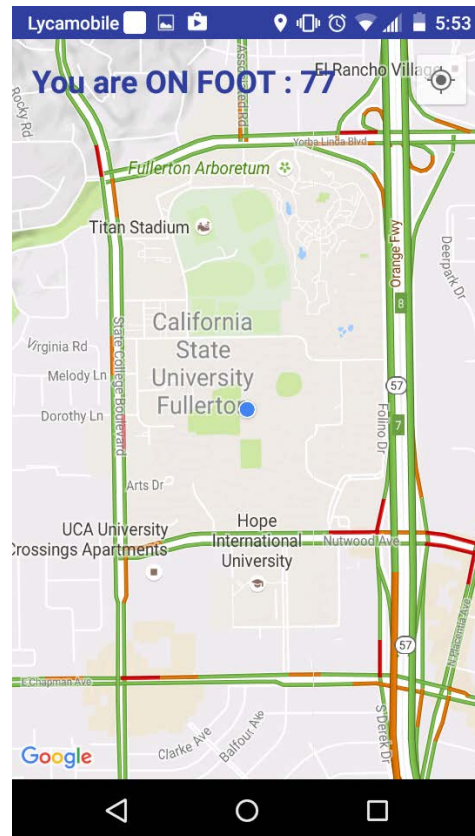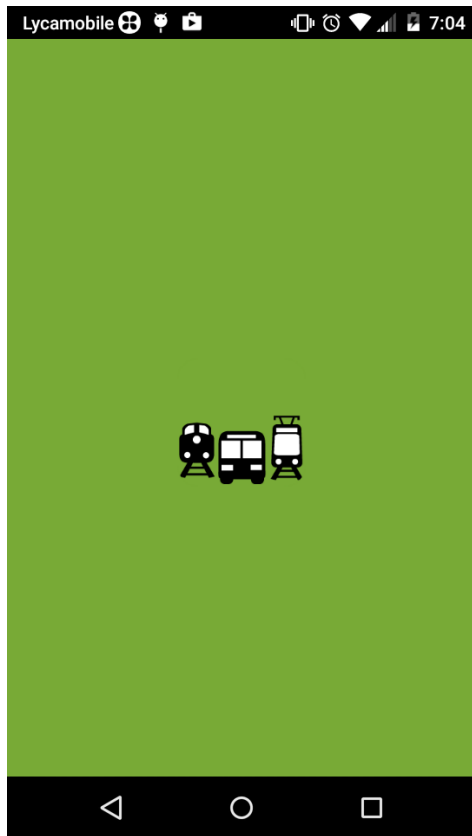- Walking
- Running
- Still

Methodology

Android records activities of user using mobile sensors continuously using a background service.

Record the timings between change in the activities. (E.g Change from STILL to On Foot)

According to the Timings each user records for an activity, points are awarded to it.

Application RideSmart

Challenges

Working on GPS and Testing the features required lot of travel.

Working on continuously running background services, which consumes too much battery.

Synchronizing server and client databases.

Future Enhancements

Accurate tracking of activities as Walking, Running, on Bicycle and in Vehicle.

In Vehicle can also be tracked by GPS, which can provide paths on Map.

We can compare these paths with the actual Bus/Metro paths. If the actual paths and timings of the Bus/Metro rides match we can determine if user is using the transportation facility or not.

We can award points according to their travel preference(Car vs Public transport).

A points table can be maintained within the contact list of the user.

Tap card data can also be mapped into application to track the use of public transport.

Free rides can be given to the users who use public transport frequently.

Conclusion

A user's transportation mode can be tracked with his/her cell phone.

To encourage users to participate in sustainable transportation, gamification can be introduced with the awarding of points and/or giving actual rewards such as free rides after some mileage of public transit use.

Games like Pokémon Go are able to involve lots of users due to the popularity of cartoon characters. Inclusion of such a theme in the game can bring much user involvement.

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